What is claimed is:

1.   A method for making crystal resonators comprising the steps of:

forming a pair of primary electrodes disposed roughly at the center of an AT-cut crystal substrate;

forming a pair of secondary electrodes on said AT-cut crystal substrate, which are formed in a shape surrounding said primary electrodes and are electrically short-circuited;

grounding said secondary electrodes and measuring a frequency of a two-terminal pair circuit, with one of said pair of primary electrodes and said secondary electrodes serving as input terminals and another of said pair of primary electrodes and said secondary electrodes serving as output terminals; and

performing frequency adjustments when there is a difference between a measured frequency and a desired frequency.

2.   A method for making crystal resonators comprising the steps of:

forming on one main surface of an AT-cut crystal substrate, a cavity, first and second grooves disposed rightward and leftward from said cavity, third and fourth grooves disposed on either outer side of said first and second grooves, and fifth and sixth grooves formed perpendicular to the first and the second groove;

forming a pair of primary electrodes on said AT-cut crystal substrate, which are aligned roughly to the center of said cavity;

forming a pair of secondary electrodes on said AT-cut crystal substrate, which are formed in a shape surrounding said primary electrodes and are electrically short-circuited;

grounding said secondary electrodes;

measuring a frequency of a two terminal pair circuit; and

performing a frequency adjustment if there is a difference between a measured frequency and a desired frequency, an input terminal for said measuring being formed by respectively

7610/0M901

18 connecting a first pair of pad electrodes disposed at positions

19 between said first and third grooves with one of said pair of

20 primary electrodes and said secondary electrodes, and an output

21 terminal for said measuring being formed by respectively

22 connecting a second pair of pad electrodes disposed between said

23 second and fourth grooves with the other of said pair of primary

24 electrodes and said secondary electrodes.

1 3. The method for making crystal resonators as described in

2 claim 2, further comprising:

3   forming one of said crystal resonators is obtained by

4 dividing along said first, second, fifth, and sixth grooves.

1 4. An AT-cut crystal substrate for forming piezoelectric

2 resonators, said AT-cut crystal substrate comprising:

3   a pair of primary electrodes disposed roughly at the center

4 of said AT-cut crystal substrate; and

5   a pair of secondary electrodes, which are formed in a shape

6 surrounding said primary electrodes and are electrically

7 short-circuited, wherein:

8   said secondary electrodes are grounded; and

9   one of said pair of primary electrodes and said secondary

10 electrodes serve as input terminals and another of said pair of

11 primary electrodes and said secondary electrodes serve as output

12 terminals.

1 5. An AT-cut crystal substrate for forming piezoelectric

2 resonators, said AT-cut crystal substrate comprising:

3   a cavity formed on one main surface of said AT-cut crystal

4 substrate;

5   a pair of primary electrodes aligned roughly to the center

6 of said cavity;

7   a pair of secondary electrodes, which are formed in a shape

8 surrounding said primary electrodes and are electrically

9 short-circuited, said secondary electrodes being grounded;

10 first and second grooves disposed rightward and leftward

11 from said cavity;

12 third and fourth grooves disposed on either outer side of

13 said first and second grooves;

14 fifth and sixth grooves formed perpendiculary to the first

15 and the second grooves;

16 an input terminal for said measuring formed by respectively

17 connecting a first pair of pad electrodes disposed at positions

18 between said first and third grooves with one of said pair of

19 primary electrodes and said secondary electrodes; and

20 an output terminal for said measuring formed by

21 respectively connecting a second pair of pad electrodes disposed

22 between said second and fourth grooves with the other of said pair

23 of primary electrodes and said secondary electrodes.

1 6.   The AT-cut crystal substrate as described in claim 5,

2 wherein one of said piezoelectric resonators is obtained by

3 dividing along said first, second, fifth, and sixth grooves.

13

7610/0M901